

PATENT SPECIFICATION

DRAWINGS ATTACHED

930,903

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COMPLETE SPECIFICATION

Improvements relating to Vehicle Seats

We, FRITZ BREMSHEY, and WOLFGANG FÜLLING, both German citizens, personally responsible partners of the firm BREMSHEY & Co., of Solingen-Ohligs, Germany, do hereby declare the invention, for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:—

Our Specification No. 6499/61 (Serial No. 918,114) concerns a vehicle seat which has a frame guided by a parallelogram linkage and provided with a spring and shock-absorbing arrangement. The spring acts on the frame through a lever whose effective moment arm from its pivot to its point of contact with the frame decreases with increasing spring distortion. By this means the spring action on the frame increases at a rate which is greater than the rate of increase of the spring distortion as the frame is moved away from its equilibrium position.

In this parent Specification, the lever whose effective moment arm decreases is mounted behind the seat frame and only extends beneath the frame for a relatively short distance. The spring which acts on the lever, and the shock absorber are also situated behind the seat frame. The seat therefore takes up considerable space in the longitudinal direction. This space of course, may be available in omnibuses, but not in the confined driving cab of a lorry, where the space between the rear wall of the cab and the back rest of the seat is extremely small.

According to the present invention, which is an improvement in or a modification of that described in the parent Specification, the lever is a bell crank lever situated beneath the seat frame and one arm of the lever is acted upon by the spring in a substantially horizontal direction.

By repositioning the lever under the seat, and forming the lever as a bell crank, the spring may also be positioned under the seat so that further room is saved. This is because the seat frame is usually sufficiently clear of the vehicle chassis for a helical spring to be received on its side but

not on end beneath the seat.

The angle between the arms of the bell crank lever is preferably chosen so that it also contributes to the progressive increase in spring action by ensuring that the effective moment arm between the line of action of the spring and the pivot of the lever increases as the frame is moved from its equilibrium position.

One example of a seat constructed in accordance with the invention is illustrated in the accompanying drawings, in which:—

Figure 1 is a side elevation with parts in section; and,

Figure 2 is a perspective view of some parts of a base frame of the seat.

The seat has a base plate 1 and a seat frame 2 which is connected to the base plate 1 by two pairs of guide rods 3 and 4. The base plate 1, the seat frame 2 and the pairs of guide rods 3, 4 constitute a parallelogram of guide rods by which the seat frame 2 is guided so that it is always at the same angle relatively to the base frame. The seat frame carries a seat cushion 5 and a back rest 6.

Rotatably mounted at 7, on the base plate 1 are two mutually equivalent symmetrically disposed bell crank levers having long arms 8 and short arms 9. The levers are connected rigidly together by a shaft 10 and therefore constitute together mechanically, a single lever. Rotatably mounted on the shaft 10 are two bushes 12 which are connected rigidly together by a strap 11, and in which rods 13 are longitudinally slidable. These rods are secured in a cross-head 14 which is hinged by a stud 15 to the eye 16 at the end of a thrust rod 17. The rods 13 form supports for helical springs 18 which act as compression springs and therefore tend to push the bushes 12 away from the cross-head 14 and hence to rotate the bell crank levers 8, 9 in a clockwise direction as seen in the drawings.

The thrust rod 17 can be displaced in a bearing 19, fixed to the base plate 1, and is supported against a screw threaded shank 20

which is manually adjustable by means of a handle 21. By adjusting the handle and shank, the position of the thrust rod 17, together with that of the cross-head 14, may be shifted horizontally. This alters the equilibrium height of the unloaded seat, in a similar manner to that described in the parent Specification.

On pivot pins 22, which connect the front pair of guide rods 3 to the seat frame 2, are mounted rollers 23 with which the faces of the lever arms 8 make contact so that the force of the springs 18 is transmitted via the bushing 12, the shaft 10 and the bell crank levers 8, 9 to the seat frame 2.

The springing of the seat is thus progressive in two respects. If the seat is statically loaded by a person sitting on it, or dynamically by vertical jolts during travelling, the rollers 23 ride upon the edges 24 of the lever arms 8, and the moment arm from the pivot point 7 is reduced, therefore the total effective spring action on the frame is increased. Upon this progressive action of the spring 13 is superimposed a further increase due to the fact that the effective length a of the moment arm of the lever 9 increases as the bell crank levers 8, 9 rotate in an anticlockwise sense.

The seat is provided in customary manner with shock absorption in addition to the spring arrangement. In order to simplify the drawings, the shock absorber has been omitted. It may, however, be constructed in the same manner as that described in the parent Specification.

In the illustrated example the edges 24 on which the rollers 23 ride are straight. However, these edges may also be curved, so that a further progressive spring action is produced. The progressive action is then dictated not only by the variation of the distance between the

pivot points 7, the levers 8, 9 and the pivot point of the rollers 23, but also by the shape of the edges 24, which gives the lever arms 8 the action of cam plates.

WHAT WE CLAIM IS:—

1. A vehicle seat having a frame guided by a parallelogram linkage and provided with spring and shock absorbing arrangements, the spring arrangement including a bell crank lever which is situated beneath the seat frame and one arm of which is acted upon by a spring in a substantially horizontal direction, the lever being arranged so that the effective moment arm from its pivot to its point of contact with the frame decreases with increasing spring distortion as the frame is moved away from its equilibrium position.

2. A seat according to claim 1, in which the angle between the arms of the bell crank lever is so arranged that the effective moment arm between the line of action of the spring and the pivot of the lever increases as the frame is moved away from its equilibrium position.

3. A seat according to claim 1 or claim 2, in which the arm of the lever which engages the frame is curved and is arranged so that the curvature further decreases the effective moment arm from the pivot of the lever to its point of contact with the frame as the frame is moved away from its equilibrium position.

4. A seat according to claim 1, substantially as described with reference to the accompanying drawings.

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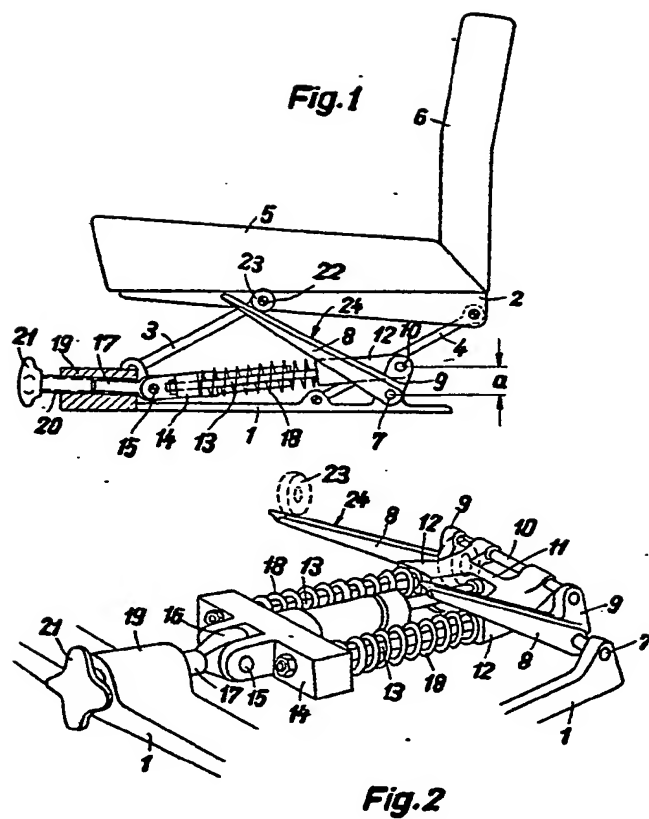
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COMPLETE SPECIFICATION

1 SHEET

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